DEFENSE INFORMATION SYSTEMS AGENCY
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IN REPLY REFER TO: Joint Interoperability Test Command (JTE) **1 Aug 12**

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Extension of the Special Interoperability Test Certification of the Juniper EX4200 Series Switch with JUNOS™ 11.2

References: (a) DoD Directive 4630.05, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2005
(b) CJCSI 6212.01E, "Interoperability and Supportability of Information Technology and National Security Systems," 15 December 2008
(c) through (e), see Enclosure

1. References (a) and (b) establish the Defense Information Systems Agency (DISA), Joint Interoperability Test Command (JITC), as the responsible organization for interoperability test certification.

2. The Juniper EX4200-24F and EX4200-48PX Junos™ 11.2 are hereinafter referred to as the system under test (SUT). The SUT meets all of its critical interoperability requirements and is certified for joint use within the Defense Information System Network (DISN) as an Assured Services Local Area Network (ASLAN) Layer 2/Layer 3 access switch when deployed as a single device or in a stacked configuration (Virtual Chassis) of up to 10 devices or 480 users. The SUT is certified as interoperable for joint use with other ASLAN components listed on the Unified Capabilities (UC) Approved Products List (APL) with the following interfaces: 10/100/1000BaseT for uplink and access, and 100/1000/10000BaseX for uplink. The SUT meets the critical interoperability requirements set forth in Reference (c), using test procedures derived from Reference (d). The Juniper EX4200-24F-DC, EX4200-24P, EX4200-24T, EX4200-24PX, EX4200-24T-DC, EX-4200-48P, EX4200-48T, EX4200-48T-DC, EX4200-24F-DC-TAA, EX4200-24F-TAA, EX4200-24P-TAA, EX4200-24T-TAA, EX4200-48P-TAA, and EX4200-48T-TAA employ the same software and similar hardware as the SUT. JITC analysis determined these systems to be functionally identical to the SUT for interoperability certification purposes and they are also certified for joint use.

The SUT is certified to support Defense Information System Network (DISN) Assured Services over Internet Protocol. If a component meets the minimum requirements for deployment in an ASLAN, it also meets the lesser requirements for deployment in a non-ASLAN. Non-ASLANs are "commercial grade" and provide support to Command and Control (C2) (ROUTINE only calls) (C2(R)), or non-C2 voice subscribers. The SUT is certified for joint use deployment in a non-ASLAN for C2(R) and non-C2 traffic. When deployed in a non-ASLAN, the SUT may also be used to receive all levels of precedence but is limited to supporting calls that are originated at ROUTINE precedence only. Non-ASLANs do not meet the availability or redundancy

requirements for C2 or Special C2 users and therefore are not authorized to support precedence calls originated above ROUTINE.

Testing of the SUT did not include video services or data applications; however, simulated video traffic, preferred data, and best effort data were generated during testing to determine the SUT's ability to prioritize and properly queue voice media and signaling traffic. No other configurations, features, or functions, except those cited within this document, are certified by JITC. This certification expires upon changes that affect interoperability but no later than three years from the date of the signed Department of Defense (DoD) Unified Capabilities (UC) Approved Products List (APL) approval Memorandum (3 February 2012).

3. The extension of this certification is based upon Desktop Review (DTR) 1. The original certification is based on interoperability testing conducted by the United States Army Information Systems Engineering Command, Technology Integration Center (USAISEC TIC), review of the vendor's Letters of Compliance (LoC), and DISA CA Recommendation. Interoperability testing was conducted by the USAISEC TIC, Fort Huachuca, Arizona, from 24 through 28 October 2011 and documented in Reference (e). Review of the vendor's LoC was completed on 8 November 2011. DISA's adjudication of outstanding TDRs was completed on 23 August 2011. The DISA CA provided a positive recommendation on 22 December 2011, based on the security testing completed by USAISEC TIC-led IA test teams. Those test results are published in a separate report, Reference (f). This DTR was requested to include the EX4200-24PX-TAA and X4200-48PX-TAA models as Layer 2/Layer 3 access switches. These models have the same software and similar hardware and analysis determined these systems to be functionally identical to the SUT. This DTR does not change the fit, form, or function of the security posture. Therefore, JITC approves this DTR. The IA posture of this DTR did not changed; therefore, the original DISA CA approval date of 22 December 2011 remains the same.

4. Table 1 provides the SUT's interface status. The SUT's capability and functional requirements are listed in Table 2.

Table 1. SUT Interface Status

Interface	Applicability Access	CRs/FRs (See Note 1.)	Status Access
Network Management Interfaces for Layer 3 Access Switches			
EIA/TIA (Serial) 232	R	EIA/TIA-232	Met
IEEE 802.3i (10BaseT UTP)	C	7-18, 25-28, 32-36, 44-46, 55-57, 72-75	Met
IEEE 802.3u (100BaseT UTP)	C	7-18, 25-28, 32-36, 44-46, 55-57, 72-75	Met
IEEE 802.3ab (1000BaseT UTP)	C	7-18, 25-28, 32-36, 44-46, 55-57, 72-75	Met
Uplink Interfaces for Layer 3 Access Switches			
IEEE 802.3u (100BaseT UTP)	C	7-18, 28, 44-46, 55-57, 72-75	Met
IEEE 802.3u (100BaseFX)	C	10-18, 28, 44-46, 55-57, 72-75	Met
IEEE 802.3ab (1000BaseT UTP)	C	7-18, 28, 44-46, 55-57, 72-75	Met
IEEE 802.3z 1000BaseX Fiber	C	10-18, 28, 44-46, 55-57, 72-75	Met
IEEE 802.3ae (10GBaseX)	C	10-18, 28, 44-46, 55-57, 72-75	Met
Access Interfaces for Layer 3 Access Switches			
IEEE 802.3I (10BASET UTP)	C	7-18, 28, 44-46, 55-57, 72-75	Met
IEEE 802.3u (100BaseT UTP)	C	7-18, 28, 44-46, 55-57, 72-75	Met
IEEE 802.3u (100BaseFX)	C	10-18, 28, 44-46, 55-57, 72-75	Met[4]
IEEE 802.3ab (1000BaseT UTP)	C	7-18, 28, 44-46, 55-57, 72-75	Met
IEEE 802.3z (1000BaseX Fiber)	C	10-18, 28, 44-46, 55-57, 72-75	Met[4]

Table 1. SUT Interface Status (continued)

Interface	Applicability Access	CRs/FRs (See Note 1.)	Status Access
Generic Requirements for all Interfaces			
Generic Requirements not associated with specific interfaces	R	30-32, 35, 36, 40, 69-71	Met
DoD IPv6 Profile Requirements	R	UCR Section 5.3.5.5	Met
Security	R	79-82	Met[3]

NOTES:
1. The SUT's specific capability and functional requirement ID numbers depicted in the CRs/FRs column can be cross-referenced in Table 2. These requirements are for the following Juniper switch models, which are certified in the ASLAN Access layer: Juniper **EX4200-24F**, **EX4200-48PX**, EX4200-24F-DC, EX4200-24P, EX4200-24T, EX4200-24PX, EX4200-24T-DC, EX4200-48P, EX4200-48T, EX4200-48T-DC, EX4200-24F-DC-TAA, EX4200-24F-TAA, EX4200-24P-TAA, EX4200-24T-TAA, EX4200-48P-TAA, EX4200-48T-TAA. The other devices listed that are not bolded or underlined are in the same family series as the SUT but were not tested. However, they utilize the same OS software and similar hardware as the SUT, and JITC analysis determined them to be functionally identical for interoperability certification purposes. The EX4200-24PX-TAA and EX4200-48PX-TAA models were included in Desktop Review 1.
2. Access layer switches are required to support only one of the following IEEE interfaces: 802.3i, 802.3j, 802.3u, 802.3ab, or 802.3z.
3. Security testing is accomplished via USAISEC TIC-led IA test teams, and the results are published in a separate report, Reference (f).
4. 100BaseFX and 1000BaseFX access interface support is only available on the EX4200-24F model.

LEGEND:

802.3ab	1000BaseT Gbps Ethernet over twisted pair at 1 Gbps (125 Mbps)	DoD	Department of Defense
802.3ae	10 Gbps Ethernet	EIA	Electronic Industries Alliance
802.3i	10BaseT Mbps over twisted pair	EIA-232	Standard for defining the mechanical and electrical characteristics for connecting Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) data communications devices FR Functional Requirement
802.3u	Standard for carrier sense multiple access with collision detection at 100 Mbps		
802.3z	Gigabit Ethernet Standard	IA	Information Assurance
10BaseT	10 Mbps (Baseband Operation, Twisted Pair) Ethernet	ID	Identification
		IEEE	Institute of Electrical and Electronics Engineers
100BaseT	100 Mbps (Baseband Operation, Twisted Pair) Ethernet	IPv6	Internet Protocol version 6
		JITC	Joint Interoperability Test Command
100BaseFX	100 Mbps Ethernet over fiber	Mbps	Megabits per second
1000BaseFX	1000 Mbps Ethernet over fiber	OS	Operating System
1000BaseT	1000 Mbps (Baseband Operation, Twisted Pair) Ethernet	R	Required
		SUT	System Under Test
10GBaseX	10000 Mbps Ethernet over Category 5 Twisted Pair Copper	TIA	Telecommunications Industry Association
		TIC	Technology Integration Center
ASLAN	Assured Services Local Area Network	UCR	Unified Capabilities Requirements
C	Conditional	USAISEC	U.S. Army Information Systems Engineering Command
CR	Capability Requirement	UTP	Unshielded Twisted Pair

Table 2. SUT Capability and Functional Requirements

ID	Requirement	UCR Reference
1	ASLAN components can have no single point of failure for >96 users for C2 and Special C2 users. Non-ASLAN components can have a single point of failure for C2(R) and non-C2 users. (R)	5.3.1.2.1, 5.3.1.7.7
2	Non-blocking of any voice or video traffic at 12.5% for access layer switches. (R)	5.3.1.3
3	Maximum of 1 ms of jitter for voice and 10 ms for video for all ASLAN components. (R) Does not apply to preferred data and best effort data.	5.3.1.3
4	Maximum of 0.015% packet loss for voice and 0.05 % for video and preferred data for all ASLAN components. (R) Does not apply to best effort data.	5.3.1.3
5	Maximum of 2 ms latency for voice, 10 ms for video, and 15 ms for preferred data for all ASLAN components. (R) Does not apply to best effort data.	5.3.1.3
6	At least one of the following IEEE interfaces for access layer components: 802.3i, 802.3j, 802.3u, 802.3ab, and 802.3z. (R)	5.3.1.3.1
7	Force mode and auto-negotiation IAW IEEE 802.3, filtering IAW RFC 1812, and flow control IAW IEEE 802.3x. (R)	5.3.1.3.2

Table 2. SUT Capability and Functional Requirements (continued)

ID	Requirement		UCR Reference
8	Port Parameter Requirements	Auto-negotiation IAW IEEE 802.3. (R)	5.3.1.3.2
9		Force mode IAW IEEE 802.3. (R)	
10		Flow control IAW IEEE 802.3x. (R)	
11		Filtering IAW RFC 1812. (R)	
12		Link Aggregation IAW IEEE 802.3ad (output/egress ports only). (R)	
13		Spanning Tree Protocol IAW IEEE 802.1D. (R)	
14		Multiple Spanning Tree IAW IEEE 802.1s. (R)	
15		Rapid Reconfiguration of Spanning Tree IAW IEEE 802.1w. (R)	
16	LACP link Failover and Link Aggregation IAW IEEE 802.3ad (uplink ports only). (R)		5.3.1.3.2, 5.3.1.7.7.1
17	Class of Service Marking: Layer 3 DSCPs IAW RFC 2474. (R) Layer 2 3-bit user priority field of the IEEE 802.1Q 2-byte TCI field. (C)		5.3.1.3.3
18	VLAN Capabilities IAW IEEE 802.1Q. (R)		5.3.1.3.4
19	Protocols IAW DISR profile (IPv4 and IPv6). IPv4 (R: LAN Switch, Layer 2 Switch): IPv6 (R: LAN Switch, C: Layer 2 Switch). Note: Layer 2 switch is required to support only RFC 2460, 5095, 2464, and be able to queue packets based on DSCPs in accordance with RFC 2474.		5.3.1.3.5
20	QoS Features	Shall support minimum of 4 queues. (R)	5.3.1.3.6
21		Must be able to assign VLAN tagged packets to a queue. (R)	
22		Support DSCP PHBs per RFCs 2474, 2597, 2598, and 3246. (R: LAN Switch). Note: Layer 2 switch is required to support RFC 2474 only.	
23		Support a minimum of one of the following: Weighted Fair Queuing (WFQ) IAW RFC 3662, Priority Queuing (PQ) IAW RFC 1046, Custom Queuing (CQ) IAW RFC 3670, or Class-Based WFQ IAW RFC 3366. (R)	
24		Must be able to assign a bandwidth or a percentage of traffic to any queue. (R)	
25	Network Monitoring	SNMP IAW RFCs 1157, 2206, 3410, 3411, 3412, 3413, and 3414. (R)	5.3.1.3.7
26		SNMP traps IAW RFC 1215. (R)	
27		Remote monitoring IAW RFC 1281 and Advanced Encryption Standard (AES) Cipher Algorithm in the SNMP User-based Security Model IAW RFC 3826. (R)	
28	Product Requirements Summary IAW UCR 2008, Change 2, Table 5.3.1-5. (R)		5.3.1.3.9
29	E2E Performance (Voice)	No more than 6 ms latency over any 5-minute period measured under 100% congestion. (R)	5.3.1.4.1
		No more than 3 ms jitter over any 5-minute period measured under 100% congestion. (R)	
		Packet loss not to exceed .045% engineered (queuing) parameters over any 5-minute period under 100% congestion. (R)	
30	E2E Performance (Video)	No more than 30 ms latency over any 5-minute period measured under 100% congestion. (R)	5.3.1.4.2
		No more than 30 ms jitter over any 5-minute period measured under 100% congestion. (R)	
		Packet loss not to exceed .15% engineered (queuing) parameters over any 5-minute period under 100% congestion. (R)	
31	E2E Performance (Data)	No more than 45 ms latency over any 5-minute period measured under 100% congestion (R)	5.3.1.4.3
		Packet loss not to exceed .15% engineered (queuing) parameters over any 5-minute period under 100% congestion. (R)	
32	LAN Network Management	Configuration Control for ASLAN and non-ASLAN. (R)	5.3.1.6.1
33		Operational Controls for ASLAN and non-ASLAN. (R)	5.3.1.6.2
34		Performance Monitoring for ASLAN and non-ASLAN. (R)	5.3.1.6.3
35		Alarms for ASLAN and non-ASLAN. (R)	5.3.1.6.4
36		Reporting for ASLAN and non-ASLAN. (R)	5.3.1.6.5
37	Redundancy	Redundant Power Supplies. (Required on standalone redundant products.)	5.3.1.7.7
38		Chassis Failover. (Required on standalone redundant products.)	
39		Switch Fabric Failover. (Required on standalone redundant products.)	
40		Non-LACP Link Failover. (R)	
41		Fiber Blade Failover. (R)	
42		Stack Failover. (C) (Required if the stack supports more than 96 users.)	
43		CPU (routing engine) blade Failover. (R)	
44	Support IPv6 packets over Ethernet IAW RFC 2464. (R)		5.3.5.4
45	Site Requirements	Engineering Requirements: Physical Media for ASLAN and non-ASLAN. (R) (Site requirement)	5.3.1.7.1
46		Battery Back-up: two hours for non-ASLAN components and eight hours for ASLAN components. (R) (Site requirement)	5.3.1.7.5
47		Availability of 99.999 percent (Special C2), and 99.997 percent (C2) for ASLAN (R), and 99.9 percent (non-C2 and C2(R)) for non-ASLAN. (R) (Site requirement)	5.3.1.7.6

Table 2. SUT Capability and Functional Requirements (continued)

ID	Requirement		UCR Reference
48	IA Security requirements	Port-Based access Control IAW IEEE 802.1x. (R)	5.3.1.3.2
49		Secure methods for network configuration. SSH2 instead of Telnet and support RFCs 4251-4254. Must use HTTPS instead of HTTP and support RFCs 2660 and 2818 for ASLAN and non-ASLAN. (R)	5.3.1.6
50		Security (R)	5.3.1.3.8
51		Must meet IA requirements IAW UCR 2008, Change 2, Section 5.4 for ASLAN and non-ASLAN. (R)	5.3.1.5

LEGEND:

ASLAN	Assured Services Local Area Network	HTTPS	Hypertext Transfer Protocol, Secure	PHB	Per Hop Behavior
C	Conditional	IA	Information Assurance	QoS	Quality of Service
C2	Command and Control	IAW	in accordance with	R	Required
C2(R)	Command and Control ROUTINE only	ID	identification	RFC	Request for Comments
CPU	Central Processing Unit	IEEE	Institute of Electrical and Electronics Engineers	SNMP	Simple Network Management Protocol
DISR	Department of Defense Information Technology Standards Registry	IPv4	Internet Protocol version 4	SSH2	Secure Shell Version 2
		IPv6	Internet Protocol version 6	SUT	System Under Test
DSCP	Differentiated Services Code Point	LACP	Link Aggregation Control Protocol	TCI	Tag Control Information
E2E	End-to-End	LAN	Local Area Network	UCR	Unified Capabilities Requirements
HTTP	Hypertext Transfer Protocol	ms	millisecond	VLAN	Virtual Local Area Network

5. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at https://stp.fhu.disa.mil. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at http://jit.fhu.disa.mil (NIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at http://jitc.fhu.disa.mil/tssi. Due to the sensitivity of the information, the Information Assurance Accreditation Package (IAAP) that contains the approved configuration and deployment guide must be requested directly through government civilian or uniformed military personnel from the Unified Capabilities Certification Office (UCCO), e-mail: disa.meade.ns.list.unified-capabilities-certification-office@mail.mil.

6. The JITC point of contact is Mr. Edward Mellon, DSN 879-5159, commercial (520) 538-5159, FAX DSN 879-4347, or e-mail to edward.a.mellon.civ@mail.mil. The JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The Tracking Number for the SUT is 1115302.

FOR THE COMMANDER:

Enclosure a/s

For RICHARD A. MEADOR
Chief
Battlespace Communications Portfolio

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ADDITIONAL REFERENCES

(c) Office of the Assistant Secretary of Defense, "Department of Defense Unified Capabilities Requirements 2008 Change 1," 22 January 2010
(d) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006
(e) Joint Interoperability Test Command, Memo, JTE, "Special Interoperability Test Certification of the Juniper EX4200 Series Switch with JUNOS™ 11.2," 26 January 2012
(e) U.S. Army Information Systems Engineering Command (HQUSAISEC), Technology Integration Center (TIC), "Information Assurance (IA) Assessment of Juniper EX4200 (Tracking Number 1115302)," 13 December 2011